




# Form Release & The Law

By Bob Waterloo

NPCA Photo

-  Subject to 250 g/L limit
-  Pending the 250 g/L limit
-  Subject to federal EPA regulations (450 g/L)



As of 12/10/2007



## Several states have upped the ante beyond the fed's maximum allowable VOCs. Is your precast operation in compliance?

How would you feel if a speed limit sign in your neighborhood was changed and you didn't know about it? Then a police officer pulls you over to give you a ticket. "But I didn't know the speed limit had been changed," you say. "Ignorance of the law is no excuse," says the officer as he hands you the ticket.

Well, that is how new regulatory requirements sometimes get the attention of the precast and pipe industries. A company receives a citation and then, all of a sudden, there is a flurry of activity to publicize the new regulations and encourage manufacturers to make sure they are in compliance.

A new speed limit sign is going up again with respect to Volatile Organic Compounds and levels allowed by the Environmental Protection Agency. If you use form release agents, it is important to understand VOCs and the EPA rule.

### Volatile Organic Compounds

The EPA has been looking at VOCs in the concrete industry since Sept. 13, 1999, when it defined the allowable amount of the compound release agents and 60 other products commonly used in concrete manufacturing. When some form release agents are applied, VOCs are released into the atmosphere. The EPA regulates the "allowable levels" of VOCs that may be released.

These "allowable levels" are applied to construction sites and facilities that manufacture precast, pipe, burial vaults, prestressed products – and just about everything else that pertains to concrete. From the EPA's point of view, manufacturers of form release agents are responsible for meeting the VOC criteria. And while form release suppliers need to take VOCs into account when developing their products, it is also important that precasters understand the regulations so they can stay in compliance and avoid any penalties. The 1999 rule set the maximum allowable level of VOCs in concrete form release agents at 3.80 pounds per gallon or 450 grams per liter.

Since 1999, states that have smog problems, such as California and a series of Northeastern states, have passed laws that are more stringent than the EPA and thus supersede the EPA regulation.

The intent of regulating VOCs is to reduce the amount of ozone (O<sub>3</sub>) produced at ground level. Ozone at ground level is commonly referred to as smog. The EPA estimated that VOC regulation in the United States would help reduce ozone pollution by 113,500 tons per year.

Ozone is defined as an unstable, poisonous allotrope of oxygen that is produced in the lower atmosphere by the photochemical reaction of certain pollutants. Ozone is created by the reaction of VOCs with nitrogen oxides (NO<sub>x</sub>) in the presence of sunlight at ground level. It is responsible for exacerbating a variety of respiratory ailments such as asthma. The months of May through September are the most critical for formation of ozone at ground level.

To determine the physical properties of materials under these regulations, the manufacturer could use EPA Method 24 (40 CFR Part 60), "Determination of Volatile Matter Content, Water Content, Density, Volume Solids, and Weight Solids of Surface Coatings," or an alternative method that has been approved by individual states. While EPA Method 24 is basically a test for water-based materials, form release agents – which have been traditionally petroleum solvent based – were required to use this test to determine VOCs. A fallacy is that, while there are multiple steps in the procedure, it would be quite simple for a testing facility that is not familiar with the test to bypass some of the initial steps and begin at a point later in the total test procedures. This could give erroneous test results. It is important that all steps, from the beginning to the end, be followed as outlined in EPA Method 24.

The South Coast Area Quality Management District (SCAQMD), at the recommendation of the California Air



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- Carrying agents are EPA VOC compliant, non-carcinogenic and some are biodegradable based on the EPA's half-life requirement of 28 days.
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Resources Board (CARB), published VOC allowable levels for form release agents at a maximum of 250 grams per liter effective Jan. 1, 2000. Keep in mind that states are allowed to have more stringent levels of requirements, but they cannot exceed the Federal limit. Needless to say, meeting the California requirement was considerably more difficult than meeting the federal regulations of 450 grams per liter. California is now in the forefront of lower allowable levels of VOCs for concrete form release agents.

Other states that have similar problems with pollution (ozone) began passing rules similar to California's. On the East Coast of the United States, the Ozone Transport Commission (OTC) was formed and consists of the following states: Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, Virginia and Washington, D.C. A number of these states have already adopted the lower allowable levels of VOCs in concrete form release agents, which are more stringent than the 1998 (effective 1999) federal rule. Vermont is considering these changes for renewal of operating permits by state law. In the case of the Ozone Transport Commission regulations, VOC levels are held accountable by not only the manufacturer but also the distributor and end user. Even if a form release material is produced in a state outside the OTC, if the material is used in an OTC state, it must be in compliance with these lower allowable VOC levels.

New VOC levels for specific industries and products were introduced by these states – and passed by most through legislation. The introduced legislation was to reduce the allowable levels of VOCs in concrete form release agents to a level not to exceed 250 grams per liter. The new requirements for concrete form release agents are difficult to meet with the majority of existing technology while at the same time keeping the cost of the product within reason.

Another group of states that have reacted to this opportunity to reduce ozone/pollution is the Lake Michigan Air Directors Consortium ([www.ladco.org](http://www.ladco.org)). LADCO is made up of Michigan, Ohio, Indiana, Illinois and Wisconsin. Ohio finalized the new state rule to reduce the allowable level of VOCs in concrete form release agents to 250 grams per liter, but LADCO in its entirety decided not to take specific action. The other states have decided to wait on federal legislation based on a memo from the EPA dated May 7, 2007, pertaining to having reduced VOCs in a number of areas. It appears that the federal allowable level of VOCs in form release agents of 250 grams per liter may soon become the national standard – and is expected to be in effect as early as Jan. 1, 2009.

### Conclusions:

1. Form release agents are an important part of the precast and pipe industries and contribute to the quality of the castings.
2. Price is always a consideration in today's competitive market.
3. As this is primarily a self-policing situation, being compliant is everyone's responsibility. The EPA, whether federal or state, does not have the resources to test every form release agent

that is being used or that is on the market.

4. When buying/using a concrete form release, be sure that your supplier is aware of the old and new regulations and have it confirm in writing that the material it is selling you is compliant. It is also recommended that you ask your vendor to confirm that EPA Method 24, in its entirety, is being used and that its testing facility is reputable and familiar with the procedure.
5. Be cautious, too, that the tested materials do not contain PCBs (polychlorinated biphenyls) as these are proven carcinogens.
6. Be wary of materials that have a relatively low flash point, as quite frequently they will not meet the federal EPA VOC requirements, much less the new lower VOCs that are being mandated.

#### References:

- Federal Register, Vol. 63, No. 176, Friday, Sept. 11, 1998, under 40 CFR-59, [AD-FRL-6149-7], RIN 2060-AE55, National Volatile Organic Compound Emission Standards for Architectural Coatings, pages 44848-48887
- State of Delaware, Department of Natural Resources and Environmental Control
- www.dec.ny.gov – Part 205, Architectural and Industrial Maintenance Coatings Resource page, Regulation DEC Registered 6NYCRR part 205.5; Section 205.3 Standards,



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## Biodegradability

An area of concern that is gaining more and more attention is "biodegradability."

Given enough time, anything is biodegradable. Unfortunately, in some cases, by the time the material has biodegraded, damage to the environment may have already been done.

Because the word "biodegradable" has been inappropriately used in the past, it is important that we understand how it is truly defined and what criteria a product must meet in order to be considered biodegradable.

The correct definition of "biodegradability" can be found in the EPA 1998 Fate, Transport and Transportation Test Guidelines, Office of Prevention, Pesticides and Toxic Substances (OPPTS) 835.3100, Aerobic Aquatic Biodegradation; and in EPA 712-C-98-O and ASTM D-5864-00, Standard Test Methods for Determining Aerobic Aquatic Biodegradation of Lubricants or Their Components.

This reference gives everyone the guidelines to be followed when determining biodegradability and using the word biodegradable in claims relating to various products, including concrete form release agents. The criteria shown in the EPA references is clear in its definition as to allowable "28-day half-life" of materials in order to be considered biodegradable. Half-life is the time required for the decay of one-half of a given component in a system.

Precast operations that are near free-running water or have relatively shallow aquifers should be especially concerned about having contaminants in the soil that may adversely affect the environment. A word of caution: Just because a release agent is "water-based" does not necessarily mean it will meet the EPA requirement for it to be classified as biodegradable.

When using or buying a form release (or any material, for that matter) that claims to be biodegradable, go that one further step and ask if the material meets the criteria shown above. As there are often misunderstandings on the term biodegradable, it is wise to go that extra step in clarifying that the material is what you are really looking for.

Table of Standards; VOC Content for Architectural Coatings, Form Release Compounds

- www.OTCAIR.org – Ozone Transport Commission; Categories and VOC Limits
- State of Maine, Department of Environmental Protection, 06-096, Chapter 151, Architectural and Industrial Maintenance (AIM) Coatings
- www.ladco.org
- U.S. Environmental Protection Agency Memorandum dated May 30, 2007, "Emission Reduction Credit for Three Federal Rules for Categories of Consumer and Commercial Products under Section 183(e) of the Clean Air Act"

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